AGRICULTURAL NEWS

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This publication contains information regarding new developments in chemicals as agricultural tools and laboratory and field investigations by the Du Pont Company. It also contains published reports of investigations of agricultural departments, stations and other institutions using products of the Company's manufacture and other subjects of agricultural interest.

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ORIGINALITY OF THOUGHT NEEDED

The need for scientists who can provide new basic knowledge is at an all-time high in the United States, Dr. James G. Horsfall, director of the Connecticut Agricultural Experiment Station, said in a talk to the New England Association of Chemistry Teachers, meeting at the Station in New Haven recently.

Originality of thought is the commodity most needed in Science today, he went on, and students who show curiosity and imaginative thought in the high school or college classroom should be encouraged to choose scientific experimentation as a career.

Dr. Horsfall cited two examples of work at the Connecticut Station, this year celebrating its 75th anniversary as the oldest experiment station in America, to show that basic research pays off. These were the development of hybrid corn, which evolved from a complete reversal of genetic principles accepted at the time, and the co-discovery of vitamins, which stemmed from early protein research, at the time of no evident practical value.

HOW ABOUT FLIES?

"Are flies building up resistance to DDT? Such reports are being heard. Investigations by entomologists last year revealed certain strains of flies had appeared which seem to tolerate larger doses of DDT than normally required for controlling flies.

"Considerable study by state and federal entomologists has disclosed no change in appearance or structure of such flies. One expert says it is likely the higher the degree of control obtained, the greater will be the DDT deposit required to control the next generation. Flies that survive treatment naturally are the most tolerant, and their offspring may inherit this tolerance.

"Thus, instead of flies building up a resistance, the DDT serves to eliminate the strains most easily killed, leaves only the more resistant strains.

"The newer methoxychlor appears to kill all flies. And the good news is that apparently there will be enough of this new important insecticide this year for everyone."

---from MISSOURI RURALIST
(Topeka, Kansas)
April 22, 1950

INSECTICIDES ONLY SURE WAY OF CONTROLLING FRUIT INSECTS, DR. B. A. PORTER TESTIFIES AT HEARING

Fruit growers must control insect pests if they want to stay in business and experience has proved that use of chemical insecticides is the best way to do it, according to Dr. B. A. Porter, of the Bureau of Entomology and Plant Quarantine, United States Department of Agriculture. He spoke in Washington before the Food and Drug Administration hearings concerning the use of insecticides in the production of fruits and vegetables. These hearings are currently being held by the Federal Security Agency.

Since the Department of Agriculture began investigating measures other than insecticides for the control of fruit insects more than 50 years ago, it has tried all sorts of things, Dr. Porter said. These included parasites, light traps, bait traps, mechanical traps, orchard cultivation practices, and use of insect-resistant fruit varieties. None of these alternate methods were found satisfactory, Dr. Porter said, adding:

"The fruit grower is obliged to place chief dependence for insect control on the use of insect-killing chemicals.

"Decline of orcharding in certain areas of this country is due in large measure to losses caused by such insects. This would occur generally and the consumer would be deprived of high-quality fresh fruits which are of tremendous value from a dietary standpoint, if growers do not use insecticides."

Fruit With Worms Unfit for Human Consumption

"If injury by insects were not prevented, very little undamaged fruit would be available for market. Consumers would receive the insects themselves, or insect remains and insect contamination, along with their fruit. In other words, much of the fruit that would reach the market in the absence of insect control would be unfit for human consumption."

Dr. Porter said that several hundred insect species attack apples. "The worst of these," he said, "is the codling moth, or the 'worm in the apple'." He pointed out that one worm in an apple spoils it from the consumers' point of view, so that one worm causes the apple to have little commercial value.

The codling moth can be found everywhere apples are grown. It causes great damage when conditions are favorable. It can produce several or more worm holes per apple.

"In fact," Dr. Porter said, "a crop that is 50 per cent wormy has very little commercial value, since the cost of handling and sorting is often more than can be salvaged."

Such apples are only good for immediate local use, or for the production of low-grade cider or vinegar. Wormy apples rot quickly and cannot be stored well, and ship poorly.

Alternate Methods of Attacking Insects Described

Dr. Porter described some of the alternate methods of attacking fruit insects. Since light traps attract codling moths in considerable numbers, he said that numerous attempts have been made to use them as a control method. Exhaustive tests were made in the fruit growing sections of New York and Indiana during the 1930's. Although the traps killed many moths, satisfactory control was not obtained without the use of insecticides. Light-trap installations cost $300 per acre at that time because the method required one trap per tree. Even had the method proved satisfactory, it would have cost more than the original development of the orchard, he said.

Baits made of fermenting sugar solutions to which certain aromatic substances are added will attract tremendous numbers of codling moths into traps. But tests show that little reduction in codling moth damage results from use of such traps, Dr. Porter explained. He said that chemically-treated bands placed around the base of fruit trees will reduce the number of codling moths in an orchard, but even the best results obtained from their use never have exceeded 40 to 50 per cent reduction in the number of worms. Insect parasites which attack the eggs of the codling moth do a great amount of good when codling moth populations are high. However, the net reduction due to these natural enemies is of little practical value in severe infestations of codling moth.

WESTERN NEW YORK SPRAY, DUST SCHEDULES COMPILED

Spray and dust schedules to guide fruit and vegetable growers of western New York have been compiled by the Grasselli Chemicals Department of the Du Pont Company. There are two separate grower guides, one for fruit crops and one for vegetables. Chemicals suggested, times and frequency of applications, and other recommendations are the result of extensive research programs both in laboratories and on farms.

Those who wish copies of one or both of the schedules should write the district offices of the Du Pont Company, Grasselli Chemicals Department, located at 152 Housel Ave., in Lyndonville, and 55 Maple Ave., in Sodus.

METHOXYCHLOR TESTED AT PENNSYLVANIA EXPERIMENT STATION AS PROTECTION FOR LIMA BEAN SEEDLINGS

Methoxychlor was used successfully in 1948 for treating lima beans for prevention of seed corn maggot injury to germinating seedlings by L. E. Dills and M. L. Odland at the Agricultural Experiment Station of Pennsylvania, at State College, Pa.

Twenty-five different treatments were made using 15 different insecticides. Some materials were used at several concentrations and with various stickers. In addition to methoxychlor, only ryania and sabadilla gave any appreciable protection against this insect. Neither ryania nor sabadilla was very effective, and both had to be used at too heavy a coating to offer any practical possibilities. A good infestation was present, which is necessary to give a satisfactory comparison of the different materials.

In 1949 more extensive trials were made, but due to a light infestation and very unfavorable weather, inconclusive results were obtained.

The seed corn maggot, the larva of a small fly, lives in the soil and often attacks germinating seeds, particularly during periods of cold, damp weather. Lima beans are especially susceptible, but the insect may injure stands of corn, peas, cabbage, turnip or other vegetables so badly as to require replanting.

Several different stickers have been tried at The Pennsylvania Station. Dr. Dills reports that best results have been obtained with 20 per cent gum arabic or 5 per cent methyl cellulose solution. After the seeds were dampened with these solutions, they were immediately dusted with the different insecticides, the methoxychlor being used in a 50 per cent mixture. Work is under way to improve this kind of insecticide coating so that it will not interfere with the use of a planter in placing the seeds.

VARIOUS METHODS OF USING 2,4-D WEED KILLER IN RICE FIELDS TRIED SUCCESSFULLY, WITHOUT DAMAGING PLANTS

Increasing rice yields by as much as 45 bushels per acre is possible by control of weeds, through better planting methods and use of chemical weed killers. This is brought out in the latest information from state experimental stations in rice growing areas and field trials observed by weed eradication experts of the Du Pont Company.

The chemical weed killer which offers such increased returns is 2,4-D, a selective growth regulator. Sprayed on young rice fields in recommended amounts, it is reported to give excellent kill of Mexican weed and to control curly indigo, indigo, red root, lilies, alligator weed, water hyacinth, tie vines and many other weedy growths, without injury to rice plants. As a result, combines and binders work better and faster, getting all the grain from clean, ripe crops free of green weeds.

Airplanes Used For Large Areas

The 2,4-D is applied during the period from four to eight weeks after rice sprouts appear. From a half-pound to a pound of 2,4-D acid equivalent per acre is recommended, depending on the age of plants and amount of weed growth present. Most economical method of treating large acreage is by airplane, with costs said to run from $2.50 to $3.50 per acre, including the 2,4-D.

Methods of seeding and flooding fields to discourage weed growth have also been examined for a number of years by the Rice Branch Experimental Station at Fayetteville, Arkansas. Six methods were compared. Seeding rice broadcast on water and draining the plots once for weevil control were found to produce the cleanest fields and highest yields. Second best method was that of soaking the seed for 48 hours and sowing broadcast, followed by immediate flooding of the fields.

Growers are cautioned to follow both directions on 2,4-D labels and recommendations of county agents and chemical dealers, when treating fields with the weed killer. Wind drift of the chemical, it is warned, may result in damage to other crops in neighboring fields, while overdosage may retard growth of the rice.

USE OF DIPHENYLAMINE AND BENZOL ON ALL LIVESTOCK WOUNDS URGED BY DEPARTMENT OF AGRICULTURE TO COMBAT SCREWWORMS

Stockmen are being warned this summer to protect their livestock against screwworms, which annually cause millions of dollars of losses in various parts of the United States.

The Bureau of Entomology and Plant Quarantine of the United States Department of Agriculture recently urged Southern stockmen to take steps to reduce losses of their livestock, and to prevent the spread of screwworm flies to regions in the East and North, where they sometimes go under favorable conditions.

Here are the specific measures recommended by entomologists of the Bureau:

"1. Inspect all livestock twice each week. Treat all wounds, infested or not, with Smear 62, or a similar approved screwworm remedy containing diphenylamine and benzol.

"2. Postpone dehorning, branding, marking, castrating, or other operations leaving wounds during summer months. If such operations are absolutely essential, keep the animals under close observation and treat wounds at regular intervals until healed.

"3. Examine animals carefully before they are shipped, and treat all wounds found. Dealers of livestock should inspect animals when delivered and treat wounds that may have become infested prior to, or during shipment."

Smear 220 Contains Essential Ingredients

The Du Pont Company has been interested in contributing its research and manufacturing facilities to the fight on screwworm. In 1947 its chemists went to work with the effective ingredients of government formulas and then came up with a new, improved formulation. Extensive field tests were carried out in Texas and in several Latin American countries.

The new product is Du Pont Screwworm Smear 220. It contains 30% diphenylamine and 30% benzol, as recommended by the Bureau of Entomology and Plant Quarantine. Besides killing worms quickly and providing protection against reinfestation for several days, it has additional features:

Du Pont Smear mixes readily with body fluids. This helps the material penetrate to all parts of the wound, and aids the wound to heal.

It is a stable emulsion of a smooth, creamy consistency, which is always thoroughly mixed and ready for use without further preparation.

Du Pont Smear is white or light gray in color. It does not leave unsightly residues on the user or on the animal being treated.

Screwworms Constitute Serious Livestock Pest

According to the Bureau of Entomology and Plant Quarantine, thousands of infested animals die every year in the southern United States, where losses amount to millions of dollars in a normal year, and much more in years of widespread outbreak. When abundant, screwworms infesting the wounds of an animal can cause its death in a week or 10 days.

Screwworms are larvae of the subtropical parasitic blowfly Callitroga americana. A leaflet called "SCREWWORMS -- HOW TO RECOGNIZE AND CONTROL INFESTATIONS IN LIVESTOCK", released in April, 1950, by the Bureau of Entomology and Plant Quarantine, gives vital information on the subject. It was prepared by E. W. Laake of the Division of Insects Affecting Man and Animals; Ephraim Hixson, Nebraska Agricultural Experiment Station; and H. C. Severin, South Dakota Agricultural Experiment Station.

"Screwworms survive the winter only in the southernmost parts of the United States," say the authors. "From their overwinter breeding places, principally in southern Florida and Texas, from late spring to early fall the adults spread by flight all over these states and to California, Arizona, New Mexico, Oklahoma, Louisiana, Arkansas, Alabama, Georgia and South Carolina. In favorable seasons they may fly as far north as Colorado, Kansas, Missouri, Kentucky, and Virginia."

Screwworms Reach Areas Where Little Known About Them

Besides causing damage in areas where thay are so prevalent year after year that livestockmen know what the problem is, screwworms may spread to areas where people are unfamiliar with control measures, and cause local outbreaks.

"Many such outbreaks have occurred in the North Central States in recent years," said the leaflet, "some involving many thousand animals.

"To prevent screwworm outbreaks in the Northern States, every shipment of animals from an infested area must be carefully inspected immediately before shipment, upon arrival at its destination, and daily thereafter for at least one week. It is desirable to treat all wounds with Smear 62 before the animals are loaded, and at rest stops along the way north."

In 1949, the weather was so favorable to screwworms that they reached as far as South Dakota and New Jersey. The 1949-50 winter was so mild that, instead of overwintering only in south Texas and Florida, as is usual, they were found in many other southern areas. By late spring, the Bureau of Entomology and Plant Quarantine reported that there were areas of infestation in North Carolina, South Carolina, Tennessee, Florida, Georgia, Alabama, Mississippi; also in the central portion of Texas, in Southern California, Arizona, and New Mexico.

For additional information about means of combating screwworms, write Animal Industry Division, Du Pont Company, Wilmington, Del.

PIGS AND CHICKS MADE FASTER GAINS IN IOWA STATE COLLEGE TESTS WHEN RATIONS WERE SPIKED WITH APF

Pigs and chicks reach market-weight faster on cheaper foods when rations are spiked with APF (animal protein factor) concentrates produced by microbial fermentation now available commercially following years of research, according to reports issued by Iowa State College.

APF is not a protein, however, but a vitamin, or combination of vitamins, one of which is the new vitamin B_{12}, discovered in April, 1948. The B_{12} fraction is a red, crystalline solid, and is the long-sought pernicious anaemia remedy contained in liver, from which it was isolated at the rate of about one ounce from four tons. B_{12} is a cobalt-containing complex, which has also been shown to include traces of phosphorus and nitrogen.

Commercial producers of APF are synthesizing it from mold-like microorganisms, among them the microorganism from which streptomycin, source of the antibiotic used to combat tuberculosis, is obtained.

The advantages of fortifying pig and chicken plant protein rations with APF concentrates instead of with animal proteins from the usual sources-fishmeal, fish solubles, meat and bone scraps-have been summarized in recent reports of tests conducted at the Agricultural Experiment Station, Ames, Ia., of the Iowa State College of Agriculture and Mechanic Arts.

Dr. Damon Catron, associate professor of animal husbandry at the station, and J. J. Wallace, manager of the college's Agricultural Foundation Farms, reported results of tests with swine, and Dr. Elton L. Johnson, of the station's staff, reported on chicken tests in the issues of "Iowa Farm Science" for May, June, and August, 1949.

Feed Lot Tests

Swine tests were run under experimental conditions and were repeated under farm feed lot conditions. Final tests under experimental conditions showed that addition of the different types of animal protein factor sources to the common Corn Belt hog rations - corn, soybean oilmeal, and alfalfa - increased average daily weight gains of the test animals by from 5 to 24 per cent.

The basal corn-soybean-oilmeal-alfalfa ration, plus 0.5 per cent of an APF concentrate containing the vitamin B_{12} boosted the daily gain 24 per cent.

The same basic ration plus six per cent meat and bone scraps improved the daily gain by only five per cent as compared with the gain made on the basic ration without animal protein fortification. Said Dr. Catron's report:

"In other words, the meat and bone scraps did not contain enough of the animal protein factor or vitamin B_{12} to equal the effect of either the concentrated APF or vitamin B_{12} concentrate.

APF and Vitamin B_{12} Score Highest

"Adding 0.5 per cent vitamin B_{12} concentrate to the basal ration produced an average daily gain of 1.81 pounds, compared with 1.46 pounds for the basal ration, 1.54 for the basal ration plus six per cent meat and bone scraps, 1.60 pounds for the ration fortified with two per cent condensed fish solubles, and 1.69 pounds for the 0.5 per cent APF concentrate.

"The different sources of the animal protein factor didn't improve the feed efficiency greatly in the last series of experiments. The all-plant protein basal ration required 381 pounds of feed to produce 100 pounds of pork, compared with 376 pounds of feed with meat and bone scraps, 382 with the two per cent condensed fish solubles, 374 with 0.5 per cent vitamin B_{12} concentrate, and 367 with the 0.5 per cent APF concentrate.

"On the basis of our experiments, it appears that the vitamin B_{12} requirement of growing-fattening pigs is around 10 micrograms per pound of total ration. There are 454 million micrograms in one pound."

To find out what APF would do for large numbers of hogs fed under farm conditions on good pasture, two split herd tests were run on two farms.

The Edwards Foundation Farm, Louisa County, Ia., operates a livestock program including 10 milk cows, 300 pigs raised, and one or two carloads of feeder cattle on its 256 acres. Two men work the farm, with hogs the greatest source of income. Hogs were pastured on an alfalfa-brome combination.

Pigs on the Louisa County farm were divided into two groups as nearly alike as possible in weight and general thriftiness. Both groups had access to the same kind of pasture. Purebred Duroc lines made up the herds.

More Uniform Gains

"Those on the APF ration showed a more uniform rate of gain, a higher daily gain, a lower feed requirement and the cost of gain was lower," the report stated, after a 45-day feeding period.

The Walsh Foundation Farm is in Warren County, Ia., near Martinsdale, where a program including dual-purpose Shorthorn cattle, 200 hens, a carload of feeder cattle, and 300 pigs are raised yearly on 168 acres.

The breeding program involves a three-way cross, combining Black Polands, Durocs, and Minnesota No. 1. Only inbred boars from good performing lines are used. A mixture of alfalfa and clover seeding provided pasture.

After the feeding period of 41 days, the researchers reported "we could find no apparent difference in the looks of the pigs in the two groups. However, the average daily gain was slightly higher, the feed requirement lower, and the cost of gain was lower for the APF group."

In the hog tests, the report stated, "results obtained in these farm feed lot tests are not conclusive. Farm feed lot conditions cannot be controlled accurately. There's still need for more experiments with greater numbers of hogs." More extensive studies will be made.

Chick Tests Described

Dr. Johnson, reporting on APF tests with poultry at the Ames Station, said:

"We have conducted several experiments to determine the value of APF concentrates in poultry rations. Our results indicate that rations which contain corn, soybean meal, alfalfa meal, minerals and vitamins with APF concentrate during the early growing period, will produce excellent chicks.

"The chicks which have received the simple ration without any animal protein or APF concentrate had an average weight of 1.5 pounds at eight weeks of age. Chicks which received the same diet, plus APF concentrate at the rate of 10 pounds per ton of mash, weighed 1.8 pounds and chicks receiving the Iowa State College broiler ration (also) weighed 1.8 pounds at eight weeks."

Many factors, including differences in nutritional requirements among different breeds, have not been weighed, reports of the chick study said, and, Dr. Johnson continued, "we are not sure that this simplified ration with a one-half per cent level of APF concentrate will give the best possible growth and performance with all chicks under all conditions. We need more research before we can make general recommendations.

"There is no doubt that commercial concentrates of animal protein factor will be valuable in replacing at least part of the animal proteins which we have used in most poultry rations."

DU PONT STOCKHOLDERS TOTAL REACHES NEW HIGH

With its total of stockholders at 115,871, a new high, the Du Pont Company has owners in every state of the union, with New York, Massachusetts, and Pennsylvania having the greater numbers.

The new high represented an increase of 5,926 over the number of owners recorded at the close of 1949. Of the stockholders who are individuals, about 57 per cent are women.

New York has more than 17,000 owners of Du Pont common stock; Massachusetts, about 12,000; and Pennsylvania, more than 10,000; New Jersey and California more than 5,000 each. States with less than 5,000 but more than 2,000 included Delaware, Illinois, Connecticut, Ohio.

NEW TYPE NEOPRENE HOSE DEVELOPED

A new, lightweight, high strength hose with a tough, durable tube of neoprene, the Du Pont synthetic rubber, has recently been developed for refueling tractors and other motorized farm equipment. Neoprene's excellent resistance to gasoline and fuel oils assures long trouble-free service.

The hose has a rayon braid carcass, built-in static wire, and a rubber cover designed to withstand abrasion. It is made by the United States Rubber Company and is available in sizes ranging from 5/8 inches to 1 inch inner diameter in specified cut lengths or random factory lengths. It is marketed under the name of U. S. Rainbow Farm Fuel Dispensing Hose.

DYNAMITE GETS QUICK RESULTS IN DITCHING WORK

AUGUSTA, ARK. -- Ditching with dynamite provided quick drainage for wet spots on two Arkansas county farms recently, the State of Arkansas Agricultural Extension service reports.

County Agent W. B. Vinzant of Woodruff county reported that one farmer used dynamite in reopening 375 feet of old ditch that had filled in. He used a half stick every 10 or 12 inches in the bottom of the drain. The explosives cleared a ditch six to eight feet wide at the top and 24 to 30 inches deep. He has also used dynamite to clear the ends of other old ditches on the farm.

On another farm, dynamite was used this spring to blow ditches. A drain 1,000 feet long was provided by using a half stick of dynamite every 10 inches. About 450 pounds of explosive were required to make a clean ditch 18 to 24 inches deep and six feet wide at the top.

In both cases the ground was covered with water and only one cap and fuse was required to blast a long section of the ditch. Both jobs were too small to interest a dragline operator, Mr. Vinzant said. Moreover, some of the ditches were in spots inaccessible to a dragline.

AMERICAN CONSUMER DEMOCRATICALLY DETERMINES GROWTH OF BUSINESSES, HAROLD BRAYMAN TOLD WEEKLY EDITORS

"Every day is election day in American industry" in the sense that the American consumer, by his purchases, votes daily as to which companies shall succeed, grow large and stay large, or vice versa, Harold Brayman, director of public relations of the Du Pont Company, told weekly newspaper editors in New York recently.

"No company can stay big except by the confidence of the people in the integrity and price fairness of the product, and by their vote, as purchasers, that they prefer it to others," he said in an address at the Spring meeting of the Greater Weeklies Associates.

"Every time a man buys an automobile, he casts his vote -- by a good democratic system -- as to whether General Motors, or Ford, or Chrysler produces the best car for the money, or whether Nash, Hudson or Studebaker does; the customer determines which of these shall be biggest."

Importance of Mergers Distorted

Mr. Brayman said the factor of mergers in the growth of larger businesses has been greatly distorted in public discussion. As an example he said that 60 per cent of Du Pont sales in 1949 resulted from products that did not exist or were in their commercial infancy 20 years ago and none of the 60 per cent came from mergers. He said the proportion of Du Pont assets today represented by acquisitions of other companies is 12 per cent.

Monopoly, Mr. Brayman said, is defined as the exclusive control of the supply of any commodity or service in a given market so as to permit raising the price materially above that fixed by free competition.

In view of this definition, he protested monopoly accusations at such companies as Sun Oil which, according to the government's own figures, has only 8.5 per cent of the oil business in its marketing area, A. and P. with 7 per cent of the grocery business in the United States, and Swift and Company and the other competing packers, "no one of which does over 15 per cent of the meat packing business of the United States." Du Pont, he said, does only 7 per cent of the chemical business in the United States.

Little Businesses Grow Into Big Ones

"There is abroad today throughout the country," he said, "a wide and frequently intense but completely unjustified feeling that big companies do not operate in the public interest.

"But let me remind you of two things: first, out of the small and medium sized businesses of today will come the big businesses of tomorrow; second, the small and medium sized businesses could no more exist without the big businesses than the big ones could exist without the small and medium sized ones.

"For example, if each manufacturer of nylon stockings had to make his own nylon yarn, none of your wives would be able to afford the stockings.

"And let me remind you further that if big businesses are throttled today on the pretext that they operate against the public interest, it will be only a brief interval before that tomorrow will arrive when medium and small businesses will be throttled in the same way and for the same reasons."

Mr. Brayman pointed out that Americans, with 6 per cent of the land acreage of the world and 7 per cent of its population, have more than 80 per cent of the world's automobiles, more than half of its radios and telephones, more than a third of its railways, 46 per cent of its electric power, 50 per cent of its hospital beds and 52 per cent of its high school enrollment.

Mass Production Benefits Consumers

The reason for this, he said, "is not because we have more resources than Russia or China, but because we have an industry here that makes use of initiative and enterprise and so is capable of producing goods in mass quantities for the masses of the people."

While no one can maintain that everything is right in America, he said, "it is better here than anywhere else in the world and better especially than in those countries devoted to the principle of all people starving equally." He said it is better "almost solely because of the system it is now so popular to condemn."

HOW MODERN PACKAGING HAS REVOLUTIONIZED BUYERS' HABITS SHOWN IN DU PONT SURVEY OF UNPLANNED SUPERMARKET SALES

The displays of merchandise in America's super markets are becoming more and more competitive as self-service shopping alters the food-buying habits of the nation.

Surveys by the Du Pont Company's Market Research Section show that 66.6% of all food purchases in super markets are based on decisions made while the shopper is in the store.

The latest figures, which represent an increase of 14.8% above the 51.8% of store decisions in a 1945 study, were featured at the Du Pont display of cellophane, polythene film, acetate film, and cellulose bands at the 19th National Packaging Exposition in Chicago recently.

Of the nearly 2,000 shoppers interviewed in key cities from coast to coast during the market study, 65.3% keep their shopping lists in their minds and 8.5% carry partially-written lists. Planned purchases were learned from a shopper entering a store. In a second and surprise interview, the shopper's purchases were checked at the cashier's register. Sixty-four classifications of purchases, including 15,873 items, were listed.

Candy and Cake Led Items Bought on Impulse

Shoppers decisions made in the store govern the buying of 91% of the cake sold, the survey shows. Other high store decision figures include luncheon and smoked meats, 70.8%; macaroni products, 67.4%; cookies and biscuits, 89.1%; and candy, 93.7%.

Cheese and oleomargarine in prints of convenient size also appeared in cellophane at the Du Pont display in Chicago. The new package provides good visibility. Each quarter-pound print is wrapped in cellophane with an outer wrapping of the transparent film. An opening tape is included for convenience. The prints of cheese, shaped to fit most crackers, are of three flavors packaged together, and the entire package wrapped in cellophane.

New Packages for Corn-on-Cob, Tomatoes Developed

Ready-to-cook fresh corn-on-the-cob, trimmed to convenient size for eating with waste eliminated, is packaged in an automatically overwrapped tray. Visibility for packaged fresh tomatoes is provided by open tray with die-cut-outs in the bottom to permit inspection of the stem end of the fruit.

Polythene film, Du Pont's new companion to cellophane, was demonstrated for its "work horse" properties. To show the ruggedness, strength, and flexibility of the new film under extreme conditions, it was displayed as a packaging material for such diversified materials as ice cubes, produce, textiles, machine parts, liquids, and hardware items. It was put through a tumbling test in the form of a heat-sealed bag containing rice and other grains to demonstrate its toughness and durability.

NEW TROLLING LINE DEVELOPED

A combination nylon monofilament and metal trolling line, extremely flexible and virtually non-kinking, offers a completely new type of line for fishing in both fresh and salt water. The new line, manufactured by the Braided Wire Products Company of Grosse Pointe, Michigan, is called "Monolon." It is made of fine "Monel" metal wire braided around a nylon monofilament core.

In addition to preventing kinking of the line, the nylon core prevents flattening of the braided metal wire. The metal gives an added weight advantage highly desirable in a trolling line. Both nylon and "Monel" metal are non-corroding.

FISHING TACKLE KNOT PROBLEM SOLVED

An Iowa fishing tackle manufacturer has an answer to the knot problem in nylon fishing leaders.

As every fisherman knows, the knot is the weakest point in the leader. The Erwin Weller Company of Sioux City has introduced nylon level quick-change casting leaders with a loop at one end and a snap at the other, both wire wrapped and cemented. There are no knots in the leader itself.

Bait casters will find that the leaders slide easily through rod guides. The snaps are small enough to be used in fly-fishing and convenient for changing hooks while still fishing.

FISHING LEADERS COLORED ACCORDING TO LENGTH

There need be no fumbling for the right length leader for fishermen this season.

The Jim Harvey Division of Local Industries, Inc., Lakeville, Conn., a tackle manufacturer, has hit upon the idea of dyeing the loops of tapered nylon monofilament leaders in colors according to length. For instance, six-foot leaders are dyed red at the loop; seven-and-a-half-foot, yellow; nine-foot, blue; and twelve-foot, black.

Tapered leaders, thus colored, are being put on the market under the trade-mark, "Dyed-enD".

SEARCH FOR NEW CHEMICALS TO CONTROL DISEASE, KILL INSECTS, IMPROVE QUALITY OF FOOD, FRUIT DESCRIBED

The Dakotas led the nation in 1949 in chemical control of weeds on crop land, Dr. Arne E. Carlson of the Du Pont Company said recently at Devils Lake, N. D. He spoke before a statewide conference on the use of chemicals in agriculture, sponsored by the Greater North Dakota Association.

North Dakota alone treated 2,990,000 acres of crop land with 2,4-D weed killers, Dr. Carlson said, in a campaign to increase yields of grain and other crops by eliminating the competition of weedy growths. More than half this acreage was in wheat. Other principal crops treated were oats, barley, flax, rye, corn and pasture areas.

Insect Damages Run in Billions

"Loss of crops from insect damage has been estimated to cost farmers of America around $4,000,000,000 annually," Dr. Carlson said. "If you think this is exaggerated, just take a few examples. Grasshopper control from 1936 to 1946 cost about $25,000,000, but prevented crop damage which, it was estimated, might have run into a $600,000,000 loss. In 1946 alone, grasshopper damage cost the farmer some $23,000,000.

"The corn earworm costs growers about $75,000,000 a year and the 1949 damage by the European corn borer is counted at around 350,000,000 bushels of corn, with a government loan value of better than $1.30 a bushel. In the case of the corn borer, DDT at the proper time can materially cut down this tremendous loss, while other insecticides, used properly and at the right time, are paving the way to more efficient production and more profitable crops for the American farmer."

Speaking of plant diseases, Dr. Carlson pointed out that the 10 most important plant diseases caused an estimated loss of $340,000,000 annually during the 1930's. Today, with much higher prices and increased acreages, this loss could easily have doubled. In the meantime, however, new fungicidal materials have been developed to control many of the diseases which formerly took a heavy toll of crops.

Many phases of agriculture are dependent today on chemicals that were unknown as farm production weapons 10 years ago, the speaker declared.

Safety In Insecticides Sought

"The modern trend in developing new insecticides," Dr. Carlson said, "is toward products that will do a reputable job of controlling insect pests and at the same time not constitute a hazard to warm-blooded animals, including humans."

As an example of this trend, he pointed to methoxychlor, a relatively new product comparable to DDT as an insect killer, but with less tendency to leave dangerous residues on food crops, or to be stored in fatty tissues of animals, both of which have limited the use of DDT. This has led to recommendations of methoxychlor for use on garden crops and forages for livestock feed, where residues of other insecticides would be prohibitive, he stated.

In the fungicide field, Dr. Carlson declared "the search is on for materials to control plant diseases which are not effectively controlled at the present time." Great strides have been made in this direction with a group of chemicals known as the "dithiocarbamates" which are finding rapid acceptance as protectors of crops against blights, mildew, scab, rust and other serious disease conditions.

Future Chemicals Described

A glimpse into the future was given in Dr. Carlson's brief survey of materials now being tested. These include chemicals to kill grass weeds in broadleaf crops, chemicals to prevent sprouting of potatoes in storage, others to increase sprouting of seed potatoes at spring planting time, sprays that keep fruit from dropping from trees until they are completely ripened, and other sprays that will delay the blooming of berries until spring frost danger is past.

"The right use of these powerful chemical allies of agriculture," Dr. Carlson emphasized, "is more and more becomming a means of insuring growers against loss of their crops, and at the same time improving the saleable quality of the food produced on American farms."

BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY